Space Weather Forecast

Issued on Thursday, 29 August 2024 at 01:15 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate-class flares likely. Ongoing Coronal Mass Ejection influence waning Day 1 (29 Aug), chance G1/Minor Storms.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity has been Low with a peak flare at 28/1804 UTC from a new region on the southeast limb. There are now thirteen sunspot regions on the visible disc. The new region on the southeast limb is still difficult to classify due to the viewing angle, but it does look as though it may have some complexity. It may be a couple of days before we get a true idea of this, however. A region in the southwest quadrant is starting to show some weak magnetic complexity. Another region, also in the southwest, has a very large leading spot but the trailing spots are extremely faint now. The remaining regions on the disc are either small or magnetically simple and mostly stable at present.

No Earth-directed Coronal Mass Ejections (CMEs) were observed in the past 24 hours.

Solar Wind / Geomagnetic Activity: The solar wind indicated ongoing influence from a CME that arrived early on 27 Aug. Despite this wind speeds were slow, mainly varying between 280-350 km/s. The Interplanetary Magnetic Field was strong. The north-south component was initially moderately to strongly southward directed until 28/0730 UTC before becoming mostly weakly negative but with some brief moderate peaks.

Resultant Geomagnetic activity was initially at G2/Moderate Storm (Kp6) levels until 28/0300 UTC, before easing to Active (Kp4) to G1/Minor Storm (Kp5) levels from 28/0300-0900 UTC. Activity has been Quiet to Unsettled (Kp 2-3) since then.

Energetic Particles / Solar Radiation: Solar radiation was at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is forecast with Moderate-class flares likely and a slight chance of isolated Strong flares occurring.

Solar Wind /Geomagnetic Activity: Earth is currently under CME influence, with this expected to gradually ease in the next 24 hours. No other Earth-directed CMEs feature in the forecast. A coronal hole west of centre disc may give an enhancement to the solar wind on Days 1 and 2 (29-30 Aug), potentially reaching slightly elevated levels. However, confidence is low in this feature. Solar wind modelling is forecasting a much stronger fast wind on Day 4 (01 Sep), from another coronal hole in the southeast disc. Elevated wind speeds are possible from this feature. Geomagnetic activity is expected to be at Quiet to Active levels on Day 1, with a chance of G1/Minor Storm intervals should the magnetic field turn southward directed for a period of time. Conditions are then most likely to be Quiet to Unsettled through much of the rest of the period, but with a chance of Active intervals under any fast wind influence, mainly on Days 2 and 4.

Energetic Particles / Solar Radiation: Solar radiation is likely to remain at background levels, but there is a slight chance of exceeding the S1 Minor Solar Radiation Storm level, should any larger flares occur, especially from the western disc.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	30	5	1	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	65	65	65	65
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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